

CDI Electronics®

Six Cylinder Engines

1976-1978 150-235 HP Models (With Screw Terminal Power Packs)

NO SPARK ON ANY CYLINDER:

(Note) If the engine has spark with the spark plugs out but not with them installed, the timer base is likely weak or the engine is not spinning fast enough. See steps #3 and #6 below.

1. Disconnect the Black/Yellow stop wires AT THE POWER PACKS and retest. If the engine's ignition has spark, the stop circuit has a fault. Check the key switch, harness and shift switch.
2. Disconnect the Yellow wires from the rectifier and retest. If the engine has spark, replace the rectifier.
3. Check the cranking RPM. A cranking speed of less than 250-RPM will not allow the system to spark properly. This can be caused by a weak battery, dragging starter, bad battery cables or a mechanical problem inside the engine.
4. Inspect and clean all engine and ignition ground connections.
5. Check the stator and timer base resistance and DVA output as given below:

WIRE	READ TO	OEM RESISTANCE	CDI RESISTANCE	DVA (Connected)	DVA (Disconnected)
Brown	Brown/Yellow (b)	400-600	400-600	150-400 V	150-400 V (*)
White	Blue (c)	10-20	30-40	0.6 V +	0.6 V + (#)
White	Purple (c)	10-20	30-40	0.6 V +	0.6 V + (#)
White	Green (c)	10-20	30-40	0.6 V +	0.6 V + (#)
White	Engine GND	Open	Open	150-400 V (a)	N/A
Blue	Engine GND	Open	Open	150-400 V (a)	N/A
Purple	Engine GND	Open	Open	150-400 V (a)	N/A
Green	Engine GND	Open	Open	150-400 V (a)	N/A

(*) This reading can be used to determine if a stator or pack has a problem. For instance, if you have no spark on any cylinder and the stator's DVA reading is low – disconnect the stator wires and recheck the DVA output. If the reading stays low – the stator is bad. If the reading is now within spec – the pack is bad.

(#) This reading can be used to determine if a pack has a problem in the triggering circuit. For instance, if you have no spark on one cylinder and the timer base's DVA reading for that cylinder is low – disconnect the timer base wires and recheck the DVA output. If the reading stays low – the timer base is bad. If the reading is now within spec – the pack is bad.

(a) The trigger signal rides on top of the high voltage on these timer bases. Check stator DVA first. Then if timer base DVA is 0.6 - 2.5 V, the pack is faulty.

(b) Check both pairs of stator charge coils.

(c) Check both sides of the timer base.

6. Check the DVA voltage on the White wire to engine ground. You should have a reading of at least 150V or more (while connected to the pack). If the reading is low, disconnect the timer base wires from the pack and recheck the White terminal ON THE PACK. If the voltage jumps up to an acceptable reading, the timer base may have a problem in the internal wiring (possibly a thin spot in the insulation on one wire).
7. Check the center hub triggering magnet in the flywheel. A loose magnet can cause this problem.
8. Check the triggering and charge coil flywheel magnets for cracked, broken and loose magnets.

NO SPARK OR INTERMITTENT SPARK ON ONE BANK:

1. Disconnect the stop wires from both power packs and retest. If the spark comes back, swap the power packs from side to side and reconnect the stop circuit. If the no spark problem remains on the same bank, the stop circuit is bad. Check the key switch, harness and shift switch. If the problem moves, replace the power pack that was firing correctly due to a bad blocking diode in the pack.
2. Swap the stator wire pairs from one side of the engine to the other side and see if the problem moves. If it does, the stator is bad.
3. Check the stator and timer base resistance and DVA output on BOTH banks (see NO SPARK ON ANY CYLINDER above).

NO SPARK OR INTERMITTENT SPARK ON ONE OR MORE CYLINDERS:

1. Disconnect the Yellow wires from the rectifier and retest. If the engine has good spark, replace the rectifier.
2. Check the timer base resistance and DVA output on BOTH banks (see NO SPARK ON ANY CYLINDER above).
3. Check the DVA output from the timer base. A reading of at least 0.6V or more from the White wire to the Blue, Green and Purple wires (while connected to the pack) is needed to spark the pack.
4. Disconnect the timer base from the pack and check the resistance in the pack as follows:

Red meter lead	Black meter lead	Reading
Black/White terminal	Sensor 1	100-200 ohms
Black/White terminal	Sensor 2	100-200 ohms
Black/White terminal	Sensor 3	100-200 ohms

All readings should be fairly even. If the sensor reading in the pack for the cylinder not firing shows over a 10% different reading compared to the other sensors, the pack needs replacing.

5. Check the DVA output on the Orange wires from the power pack while connected to the ignition coils. You should have a reading of at least 150V or more. If the reading is low on one cylinder, disconnect the Orange wire from the ignition coil for that cylinder and reconnect it to a load resistor. Retest. If the reading is now good, the ignition coil is likely bad. A continued low reading indicates a bad power pack.
6. Visually inspect the ignition coils for burned or discolored areas and cracks in the casing (indicating arcing inside the coil).
7. Swap the ignition coil with one that is sparking correctly.

CDI Electronics®

8. Rare causes include a weak trigger magnet. If possible, try another flywheel.

POWER PACK OR TIMER BASE REPEATEDLY BLOWS ON SAME CYLINDER:

1. Check the timer base wires for shorts to engine ground as a shorted timer base wire can destroy a SCR inside the power pack.
2. In contrast, a shorted SCR inside the power pack can destroy a timer base coil. Check the timer base resistance and DVA output (see NO SPARK ON ANY CYLINDER above).
3. Replace the ignition coil on the cylinder dropping spark.

ENGINE WILL NOT SHUT OFF:

Disconnect the stop wire at the power pack. Connect a jumper wire to the stop wire from the pack and short it to engine ground. If this stops the pack from sparking, the stop circuit has a fault. Check the key switch, harness and shift switch. If this does not stop the pack from sparking, replace the power pack. Repeat test as necessary for additional packs.

MISS AT ANY RPM:

1. Disconnect the Yellow wires from the stator to the rectifier and retest. If the miss clears, replace the rectifier.
2. In the water or on a Dynameters, check the DVA output on the Orange wires from the power pack while connected to the ignition coils. You should have a reading of at least 150V DVA or more, increasing with engine RPM until it reaches 300-400V DVA maximum. A sharp drop in DVA right before the miss becomes apparent on all cylinders will normally be caused by a bad stator. A sharp drop in DVA on less than all cylinders will normally be the power pack or timer base.
3. Connect an inductive tachometer to each cylinder in turn and try to isolate the problem. A high variance in RPM on one cylinder usually indicates a problem in the power pack or ignition coil. Occasionally a timer base will cause this same problem. Check the timer base DVA voltage (see NO SPARK ON ANY CYLINDER above).
4. Perform a high-speed shutdown and read the spark plugs. Check for water. A crack in the block can cause a miss at high speed when the water pressure gets high, but a normal shutdown will mask the problem.
5. Check the triggering and charge coil flywheel magnets for cracked, broken and loose magnets.
6. Rotate the stator one bolt hole in either direction and retest.

